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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,397	08/14/2001	Xiangheng Yang	N0099US	9154

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EXAMINER

NGUYEN, THU V

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 08/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/929,397

Applicant(s)

YANG, XIANGHENG

Examiner

Thu V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification page 1, line 17 is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. The figures 6-7 are objected to under 37 CFR 1.83(a) because fig.6 fails to show the "polygonal intersection P(A-B)", and the "N(START)" node as described in the specification page 6, lines 13-14, and line 25; and fig.7 fails to show the "bp1-p", "p-bp2" as disclosed in the specification page 7, line 25. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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Specification

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

The specification does not provide proper support for claim 10. The specification page 7, lines 5-11 discloses selecting the portion of the boundary of the first polygon that is located inside the second polygon as a LINK(START). However, the specification does not teach selecting the LINK(START) segment by comparing an angle as claimed.

4. The disclosure is objected to because of the following informalities:

- a. The specification does not disclose the test for a point being on the left, right or on a line segment as disclosed in fig.8.
- b. In the specification page 7, line 14, the disclosed "If ae2 is on the right side of be1 *and* be2" should be corrected to "If ae2 is on the right side of be1 or be2" .
- c. In the specification page 8, lines 9-10, the claimed "in the counterclockwise direction is the next link" should be corrected to "in the counterclockwise direction of the LINK(START) is the next link".

Claim Objections

5. Claims 1, 14, are objected to because of the following informalities:

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In claim 1, line 9; claim 14, line 10, the claimed “selecting that portion of the boundary either the first polygon or the second polygon” should be corrected to “selecting that portion of the boundary either of the first polygon or the second polygon”

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. In claim 1, line 4, the claimed “a first known portion” does not seem to be utilized in the subsequent steps. Further, the relationship between the “a first known portion” with the claimed “a current known portion” in line 8 is not clear.

b. In claim 1, lines 10-13, the claimed “selecting that portion of the boundary ... and that forms a minimum rotation angle therewith” is not accurate and ambiguous as explained below:

- The claimed limitation is not accurate because the claimed limitation does not cover the situation when there is only one portion that connects to the leading end of the current known portion. The specification page 8, lines 4-7 teaches the situation when there is only one portion that connects to the current known

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portion, lacking the essential element taught in the specification page 8, lines 4-7, the limitation in lines 10-13 of the claim cannot be used to select the subsequent sections of the intersection when there is only one section connected to the leading end of the current known portion.

- Further, the claimed “minimum rotation angle therewith” is ambiguous because the “minimum rotation angle” is defined only when the direction of rotation is defined. When the current known portion of the intersection is in the middle of other two segments, the minimum rotation angle obtained when the current known portion rotates clockwise is completely different from the angle obtained when the current known portion rotates counterclockwise. Further, it is not clear if the phrase “therewith” implies the current known portion, or the portion to be selected.
- c. Claims 14, and 18 are similarly rejected as discussed in claim 1 above.
- d. In claim 12, lines 1-2, the claimed limitation “determining an additional polygonal intersection of the first polygon and the second polygon” is ambiguous. It is not clear if the claimed limitation implies determining *subsequent portions of the boundary of one* intersection area, or if the claimed limitation implies determining the intersection boundary of another intersection area formed by the intersection of the first polygon with the holes in the second polygon.

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- e. In claim 18, lines 4-5, line 24, the phrase “thereof” is ambiguous, it is not clear what element the term “thereof” implies to.
- f. In claim 18, lines 22-24, the claimed “the links located entirely in a first polygonal area formed by an intersection of the first minimum bounding rectangle and the second minimum bounding rectangle that have at least one node at an end point” is ambiguous. It is not clear if the claimed limitation implies “the links that are located in the first polygonal area”, or the “links that are located *in the intersection* of the minimum bounding rectangles”. Further, it is not clear which element that has “at least one node at an end point”.
- g. In claim 18, line 26, line 28, the phrase “thereto” is ambiguous, it is not clear what element the term “thereto” implies to.
- h. In claim 28, lines 29-30, the claimed “from the order of two of said at least three links that belong to one of the polygons, determining which one of said at least three links is located inside the one of said polygons” is ambiguous. It is not clear if the claimed limitation implies determining two links that are located inside one of the polygon, or if the claimed limitation implies “determining one link that is located inside one polygon”.
- i. Claims 2-11, 13, 15-17, 19-20 are rejected as being dependent on the rejected base claims.

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Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimori (U.S Patent No. 5,179,645).

As per claim 1, 10, Tanimori teaches determining a polygonal intersection (fig.16B) of a first 2-dimensional polygon ABC (fig.9) and a second 2-dimensional polygon DEF (fig.9). The method comprises: determining a first known portion CX2 of a boundary of the intersection which comprises a portion CX2 (fig.9) of the boundary of the first polygon ABC (fig.9) that is located inside the second polygon DEF (fig.9) (col.7, lines 30-33); determining each subsequent portion of the boundary of the intersection by selecting the portion of the boundary that connect to the leading end of the known portion (col.9, lines 54-68; col.10, lines 1-5).

Tanimori does not explicitly disclose selecting the subsequent portion of the boundary that forms a minimum rotation angle. However, Tanimori teaches selecting the subsequent portion of the boundary of the intersection by judging relationship of the angle direction of the boundary portions (fig.7C; fig.17B; col.8, lines 3-68; col.9, lines 1-68; col.10, lines 1-7) and the direction of the links (col.9, lines 30-35); selecting a link that satisfies the combination of the

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angle direction and the boundary direction as taught by Tanimori would result in selecting the link that has minimal angle with the current known portion. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to select the subsequent boundary section based on the angle that the boundary section forms with the known boundary portions CX2 (fig.9) of Tanimori in order to eliminate storing both the angle direction and the boundary direction and to save data retrieval overhead.

As per claim 2-3, Tanimori teaches representing the first and second polygon by data indicating a list of edges that represent the boundaries of the polygon (col.5, lines 21-29).

As per claim 4, Tanimori teaches ordering the list of edges in a counterclockwise direction (fig.9; col.4, lines 55-62).

As per claim 7, Tanimori teaches ordering the list of edges in the counterclockwise direction (fig.9; col.4, lines 55-62). Tanimori does not teach ordering the list of edges in a clockwise direction. However, ordering the list of edges in the direction preferred to the designer requires only routine skill in the art.

As per claim 8-9, Tanimori teaches using a software program to determine the intersection (col.14, lines 53-62). Further storing the polygons data in a database representing

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two-dimensional geographic features would have been well known. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to store the list of polygons of Tanimori in a database representing geographic features in order not to require the user to enter the data of the polygon each time the user wants to generate the intersection of polygons, and to use the intersection concept for navigation purposes.

As per claim 11, determining the intersection of the boundary of the first and the second polygon by searching the rectangular formed by the minimum bounding rectangles encompassing the first and the second polygons would have been known. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine the intersection status in the invention of Tanimori by searching the overlap region of the first and the second minimum bounding rectangle of Tanimori in order to quickly determine intersection status of polygon before conducting search for the boundary of the intersection.

As per claim 12, Tanimori does not explicitly teach determining additional polygonal intersection. However, repeating the steps of determining polygonal intersection of Tanimori to search for additional intersection would have been obvious, since repeating a process for providing another result requires only routine skill in the art.

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As per claim 13, implementing a software on a server for providing services to a user through the Internet would have been well known. It would have been obvious to implement the software of Tanimori to a server in order to provide intersection information to the user through the Internet without requiring the user to obtain individual software to each user.

As per claim 14-17, refer to discussion in claims 1, 8-9, and 13 above.

10. Claims 5-6, 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimori (U.S Patent No. 5,179,645) in view of Blackwell (U.S Patent No. 6,208,352) (enclosed IDS).

As per claim 5-6, Tanimori does not teach representing a hole in a list of edges in opposite direction with the list of edges representing the polygon. However, Blackwell teaches representing the hole in a list of edges in opposite direction with the list of edges of the polygon (fig.1 and fig.5). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a list of hole of Blackwell to the method of determining the intersection of the polygons of Tanimori in order to determine intersection of a second polygon with a hole of the first polygon.

As per claim 18, refer to discussion in claims 1 and 11 above. Tanimori does not explicitly disclose identifying all the links located in the intersection area of the first and the

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second minimum bounding box and associating and identifying a node that has at least three links as claimed. However, Tanimori teaches a link list that includes all the links in the intersection area (col.4, lines 55-64; col.7, lines 45-60), and Blackman suggests building a link list for each process (col.4, lines 28-37, lines 51-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to build a separate link list of the edges in the intersection region in order to facilitate determining the boundary region of the polygon without having to retrieve unrelated data.

As per claim 19-20, refer to discussion in claim 9 and 13 above.

Cited Prior arts

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - a. Yamashita et al (U.S Patent No. 6,424,911) teaches determining, and constructing the intersection polygon from several polygon (fig.10; col.4-col.5).
 - b. Craport et al (U.S Patent No. 5,961,572) teaches minimum bounding rectangles of polygons (fig.10).

Any response to this action should be mailed to:

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or faxed to:

(703) 305-7687, (for formal communications intended for entry)

Or:

(703) 305-7687 (for informal or draft communications, please label
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park V, 2451 Crystal Drive, Arlington.
VA., Seventh Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner
should be directed to Thu Nguyen whose telephone number is (703) 306-9130. The examiner
can normally be reached on Monday-Thursday from 8:00 am to 6:00 pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, William Cuchlinski, can be reached on (703) 308-3873. The fax phone number for
this Group is (703)305-7687 .

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Group receptionist whose telephone number is (703)308-1111.



Thu Nguyen

July 25, 2002